

**Report Date:** 15 Apr 2014

**Summary Report for Individual Task**  
**551-88K-4741**  
**Analyze the Causes of Special Effects, Ghosts, and False Echoes**  
**Status: Approved**

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DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

**Condition:** Assigned as a Mate or a Boatswain onboard an Army Watercraft, given a 3 or 10 CM Radar, a completed risk assessment , an Operational Plan/Operations Order (OPLAN/OPORDER), a vessel in port or at sea, all applicable publications, forms, records, tools, materials, personnel, and equipment in all weather conditions, day or night and all MOPP levels in an Operational Environment (OE) scenario, Some iterations of this task should be performed in MOPP 4.

**Standard:** Determine the causes of special effects, ghosts, and false echoes on a 3 or 10 cm. radar with zero injury to personnel or damage to equipment.

**Special Condition:** None

**Safety Level:** Low

**MOPP:** Sometimes

Task Statements
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**Cue:** Given an OPORDER/OPLAN to analyze the causes of special effects, ghosts, and false echoes.

**DANGER**

None

**WARNING**

None

**CAUTION**

None

**Remarks:** None

**Notes:** None

### Performance Steps

1. Analyze why a blind/shadow sector occurs in a radar.
2. Analyze why false or indirect echoes occur in a radar.
3. Analyze why side lobe effects occur in a radar and how to mitigate them.
4. Analyze why multiple trace echoes occur in a radar.
5. Analyze second trace echoes and how to determine them.
6. Analyze spoking and its cause in a radar.
7. Analyze electronic interference in a radar and how to mitigate it.
8. Analyze sectoring in a radar and how to mitigate it.
9. Analyze PPI distortion in a radar.
10. Analyze the cause of serrated range rings in a radar.

(Asterisks indicates a leader performance step.)

**Evaluation Guidance:** Score the Soldier GO if all performance steps are passed (P). Score the Soldier NO-GO if any performance step is failed (F). If the Soldier fails any step, show what was done wrong and how to do it correctly.

**Evaluation Preparation:** Ensure that all information, references and equipment required to perform the task are available. Use the TC and the Evaluation Guide to score the Soldier's performance. Brief the Soldier. Tell the Soldier what is required IAW the task condition and standard.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Analyzed why a blind/shadow sector occurs in a radar.			
2. Analyzed why false or indirect echoes occur in a radar.			
3. Analyzed why side lobe effects occur in a radar and how to mitigate them.			
4. Analyzed why multiple trace echoes occur in a radar.			
5. Analyzed second trace echoes and how to determine them.			
6. Analyzed spoking and its cause in a radar.			
7. Analyzed electronic interference in a radar and how to mitigate it.			
8. Analyzed sectoring in a radar and how to mitigate it.			
9. Analyzed PPI distortion in a radar.			
10. Analyzed the cause of serrated range rings in a radar.			

**Supporting Reference(s):**

Step Number	Reference ID	Reference Name	Required	Primary
	33 CFR	Navigation and Navigational	No	Yes
	COMDTINST M16672.2C	Navigation Rules - International-Inland	No	Yes
	DUTTON	DUTTON'S NAVIGATION AND PILOTING 14th EDITION	No	Yes
	FM 4-01.502	ARMY WATERCRAFT SAFETY	No	Yes
	PUB. NO. 9	The American Practical Navigator - Bowditch	No	Yes
	TC 4-15.51	MARINE CREWMAN'S HANDBOOK	No	Yes

**Environment:** Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

AR 200-1 delineates TRADOC responsibilities to integrate environmental requirements across DOTMLPF and ensures all training procedures, training manuals, and training doctrine includes sound environmental practices and considerations. The Army's environmental vision is to be a national leader in environmental and natural resource stewardship for present and future generations as an integral part of all Army missions. Environmental protection is never completed. Continuously be alert to ways to protect our environment and reduce waste.

Leaders must ensure that their unit has an active and strong environmental program. They must understand the laws and know what actions to take. Leaders bring focus, direction, and commitment to environmental protection.

Commanding officers should ensure the following environmental programs are in place and are being maintained:

- Hazardous materials program.
- Hazardous waste program.
- Hazardous communications program.
- Pollution prevention and hazardous waste minimization recycling program
- Spill prevention and response plan program.

**Safety:** In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, Multiservice Tactics, Techniques, and Procedures for Nuclear, Biological, and Chemical (NBC) Protection, FM 3-11.5, Multiservice Tactics, Techniques, and Procedures for Chemical, Biological, Radiological, and Nuclear Decontamination.

All operations will be performed to protect and preserve Army personnel and property against accidental loss. Procedures will provide for public safety incidental to Army operations and activities and safe and healthful workplaces, procedures, and equipment. Observe all safety and/or environment precautions regarding electricity, cable, and lines. Provide ventilation for exhaust fumes during equipment operation and use hearing protection when required IAW AR 385-10, the Clean Air Act (CAA) and the CAA amendments, and the OSHA Hazard Communication standard.

Accidents are an unacceptable impediment to Army missions, readiness, morale, and resources. Decision makers at every level will employ risk management approaches to effectively preclude unacceptable risk to the safety of personnel and property affiliated with this task.

- (a) Take personal responsibility.
- (b) Practice safe operations.
- (c) Recognize unsafe acts and conditions.
- (d) Take action to prevent accidents.
- (e) Report unsafe acts and conditions.
- (f) Work as a team.

#### Prerequisite Individual Tasks :

Task Number	Title	Proponent	Status
551-88K-2710	Conduct Operation of Navigational Equipment Onboard a Class B Vessel	551 - Transportation (Individual)	Approved
551-88K-1504	Perform Vessel Pre-Sail Requirements	551 - Transportation (Individual)	Approved

551-88K-3708	Monitor Navigational Duties Onboard a Vessel	551 - Transportation (Individual)	Approved
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**Supporting Individual Tasks :**

Task Number	Title	Proponent	Status
551-88K-2710	Conduct Operation of Navigational Equipment Onboard a Class B Vessel	551 - Transportation (Individual)	Approved
551-88K-4715	Monitor Operations of Navigational Equipment Onboard a Vessel	551 - Transportation (Individual)	Obsolete

**Supported Individual Tasks :**

Task Number	Title	Proponent	Status
551-88K-3708	Monitor Navigational Duties Onboard a Vessel	551 - Transportation (Individual)	Approved
551-88K-1709	Operate Navigational Instruments Onboard a Class-A Vessel	551 - Transportation (Individual)	Approved
551-88K-1513	Observe Aids To Navigation (ATON) Onboard a Vessel	551 - Transportation (Individual)	Approved
551-88K-3511	Monitor Watch Standing Procedures Onboard a Vessel	551 - Transportation (Individual)	Approved

**Supported Collective Tasks :**

Task Number	Title	Proponent	Status
55-2-1508	Conduct Vessel Operations	55 - Transportation (Collective)	Approved
55-5-0016	Direct Vessel Operations	55 - Transportation (Collective)	Approved

**ICTL Data :**

ICTL Title	Personnel Type	MOS Data
MOS 88K Watercraft Operator SL 4	Enlisted	MOS: 88K, Skill Level: SL4, Duty Pos: TFJ